

WHAT IS CLAIMED IS:

1. An automatic focus detecting apparatus, in which an optical image is formed on an imaging device via a photographing lens, and the focal point of the photographing lens is detected on the basis of the high frequency component contained in a video signal generated from the imaging device even under a light source that is flickered at a flicker period, comprising:

10 detecting means for sampling the video signal generated at a predetermined time interval at a different timing to deliver a plurality of video signal components, while changing the image forming state on said imaging device, at a time interval equal to an integer number times as much as said flicker period and  
15 equal to an integer number times as much as the read out period of the video signal, and detecting the peak position of the high frequency component contained in each group of the video signal components; and

20 calculating means for performing an interpolation calculation based on a plurality of peak positions obtained by said detecting means so as to detect the in-focus position of the photographing lens.

2. The automatic focus detecting apparatus  
25 according to claim 1, wherein said calculating means is for obtaining an arithmetic average value of a plurality of peak positions.

3. The automatic focus detecting apparatus according to claim 1, wherein said calculating means is for performing a weighted average interpolation calculation for a plurality of peak positions.

5           4. The automatic focus detecting apparatus according to claim 3, wherein, in the weight average interpolation calculation, the coefficient for multiplying the peak position is  $2^n$  (n being an integer).

10           5. The automatic focus detecting apparatus according to claim 1, wherein the video signal is sampled by said detecting means into three group of the video components read out at a period 3 times as much as the read out period, the calculating means performs  
15 the weighted average interpolation calculation with the heaviest weight put in the intermediate position among the three peak positions obtained by the detecting means.

20           6. An automatic focus detecting apparatus used in an electronic camera that permits photographing an object as an electronic image by bringing the object into focus even under a light source flickered at a certain flicker period, comprising:

25           a photographing lens system including a focus lens movable for the focus adjustment;

          lens driving means for driving the focus lens of the photographing lens system;

an imaging device for forming an optical image of the object transmitted through the photographing lens system and for converting the optical image into a video signal;

5           detecting means for sampling, while driving a photographing lens, a video signal generated from the imaging device at a time interval equal to an integer number times as much as said flicker period and  
10           sampling a high frequency component contained in the video signal at a time interval equal to an integer number times as much as a predetermined period of the video signal so as to divide the video signal into a plurality of groups, and detecting the peak position of the high frequency component contained in each of the  
15           signal components for each group;

          arithmetic means for performing an interpolation calculation for calculating the in-focus position of the photographing lens on the basis of a plurality of peak positions obtained by said detecting means; and

20           control means for controlling the lens driving means to move the photographing lens to the calculated in-focus position.

7. The automatic focus detecting apparatus according to claim 6, wherein said arithmetic means  
25           serves to obtain an arithmetic average value of said plurality of peak positions.

8. The automatic focus detecting apparatus

according to claim 6, wherein said arithmetic means performs an interpolation calculation for obtaining a weighted average of said plurality of peak positions.

9. The automatic focus detecting apparatus  
5 according to claim 6, wherein, in the weight average interpolation calculation, the coefficient for multiplying the peak position is  $2^n$  (n being an integer).

10. The automatic focus detecting apparatus  
10 according to claim 6, wherein the video signal read out at a period 3 times as much as the read out period is divided by said detecting means into three components, the calculating means performs the weighted average interpolation calculation with the heaviest weight put  
15 in the intermediate position among the three peak positions obtained by the detecting means.